REMARKS

The foregoing amendment and the following arguments are provided generally to impart precision to the claims, by more particularly pointing out the invention, rather than to avoid prior art.

Applicant thanks the examiner for pointing out the allowable subject matter in claims 22-25, 31-37, 44-49, 54-56, 63, 65-69, 76, 78, 80 and 85.

Claims 44-49 were rejected for reciting "tuning the antenna to at least one of the frequencies". Claim 44 is amended to recited "tuning the antenna to the frequencies using a power source and an impedance reduction conductor", as supported by applicant's specification on [0049]-[0050]. Thus, claims 44 and its dependent claims are patentable over the cited references.

Claims 1, 4-6, 8, 38, 40-43, 50-53, 62, 73-74, 79 and 81-82 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,726,630 ("Marsh"), which incorporated by reference on Col. 4, lines 40-42 U.S. Patent Application No. 07/816,893, now U.S. Patent No. 5,537,105, in view of U.S. Patent No. 6,239,765 ("Johnson").

Claims 7, 11-12, 14-15, 17 and 26-27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh, in view of Johnson and U.S. Patent 5,900,808 ("Lebo").

Claim 2 was rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh in view of Johnson, and U.S. Patent No. 4,623,894 ("Lee").

Claims 3, 13 and 39 were rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh in view of Johnson, and U.S. Patent No. 5,512,910 ("Murakami").

Claims 9-10, 18-21, 26-30, 57-61, 75, 77, 83-84 and 86 were rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh in view of Johnson, and U.S. Patent No. 6,215,402 ("Kodulkala").

Claim 16 was rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh in view of Johnson, Lebo and Kodulkala.

Claim 72 was rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh in view of Johnson, Kodulkala, and U.S. Patent No. 5,320,561 ("Cook").

Claim 64 was rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh in view of Johnson, and U.S. Patent No. 5,528,222 ("Moskowitz").

Applicant respectfully disagrees. Applicant submits that the pending claims are patentable over the cited references (e.g., Marsh, Johnson, Lebo, Lee, Murakami, Kodulkala, Cook, Moskowitz).

For example, independent claim 1 recites

> "the antenna including a first portion, a second portion and an impedance reduction portion, the first portion to substantially tune the antenna to a first frequency band, *the first and second portions to tune the antenna simultaneously to a second frequency band different from the first frequency band*, the impedance reduction portion coupled to the first and second portions to facilitate tuning to the first and second frequency bands" (Claim 1, emphasis added)

The cited references in general, Johnson particularly, do not show an antenna structure recited in claim 1. Johnson's antenna does not have an "impedance reduction portion". Although Kodulkala discloses an impedance matching method, the matching circuit of Kodulkala is separate from the antenna (118). In Kodulkala, the matching circuit may be microstrip lines (Col. 5, lines 40-42, Kodulkala), or lumped circuits using elements such as inductors and capacitors (Col. 5, lines 65-67, Kodulkala), or integrated within the tag IC 124 (Col. 5, lines 65-67, Kodulkala). However, Johnson and Kodulkala do not show an impedance reduction portion ***of*** an antenna.

Thus, at least for the above reasons, claim 1 and its dependent claims are patentable over the cited references.

Claim 1 has a number of dependent claims which further recite features not found in the references, such as dependent claims 10, 83, 84, and 86.

Dependent claim 10 further recites "wherein the first and second portions of the antenna are substantially symmetric". However, the dipole antenna of Johnson is asymmetric (see, the abstract of Johnson).

Dependent claim 83 further recites "wherein the impedance reduction portion is configured to substantially tune the antenna to the first and second different frequency bands". However, the matching circuit of Kodulkala is used as a transmission line to match the impedance of the patch antenna (118) and the impedance of the RFID circuitry (124).

Dependent claim further 84 recites "the antenna comprises an dipole antenna; and the impedance reduction portion is ***integrated within one half of the dipole antenna***"; and claim 86 recites "a second half of the dipole antenna includes no impedance reduction conductor". The matching circuit of Kodulkala is a transmission line between the patch antenna (118) and the RFID circuitry (124). It is not integrated ***within*** one half of a dipole antenna. While the patch antenna (118) uses only one transmission line for connection to the RFID circuitry (124), a dipole antenna of Johnson would require two transmission line to connect the two halves of the dipole antenna. There no indication in the cited references that the teachings of Kodulkala and Johnson would lead to a dipole antenna having a first half with an integrated impedance reduction portion and a second half without an impedance reduction conductor.

Independent claim 38 recites "*the antenna includes an impedance reduction strip integrated within the antenna* to facilitate tuning to the first and second frequency bands". Similarly, independent claim 11 recites

> "the antenna having a plurality of substantially resonant frequencies and an impedance reduction strip integrated within a frequency tuning portion of the antenna" (Claim 11, emphasis added)

In Kodulkala, the matching circuit (122) is provided as a transmission line connected between the patch antenna (118) and the RFID circuitry (124) in serial (Fig. 2A of Kodulkala). Johnson

and Kodulkala do not show an impedance trip integrated within a frequency tuning portion of the antenna.

Thus, at least for the above reasons, claims 1, 10, 11, 38, 83, 84, 86, and their dependent claims are patentable.

Independent claim 18 recites:

18. (Currently Amended) A radio frequency identification device comprising:
communication circuitry configured to receive communication signals and generate communication signals according to an identification code stored to identify an object to which the radio frequency identification device is attached; and
at least one antenna to simultaneously tune to a plurality of frequency bands including a first frequency band and a second frequency band, wherein a center frequency of the second frequency band is at least twice higher than a center frequency of the first frequency band, the antenna being configured to communicate wireless signals corresponding to the communication signals including at least one of receiving the wireless signals and outputting the wireless signals. [Emphasis added]

Applicant does not agree with the assertion that "it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to employ a known dual band resonant frequency/band antenna such as taught by Johnson et al. in a system such as taught by Marsh et al." and "It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to choose the frequency bands in Marsh et al. and Johnson et al. so that they are centered at approximately 915 MHz and 2.45 GHz".

Marsh discloses an RFID system that uses interrogation signals of different frequencies to avoid weak or null interrogation signal zones caused by a combination of direct and reflected signals (see, e.g., Col. 3, line 54 – Col. 4, line 4 of Marsh). Marsh discloses the use of frequencies between 800 MHz and 1 GHz (Col. 2, lines 5-6), or use two frequencies at 750 MHz

and 915 MHz (Col. 4, lines 60-63), or uses three frequencies 910 MHz, 915 MHz, 920 MHz (that is 5 MHz apart) (Col. 6, lines 36-40). These frequencies are within 20% from the highest frequency.

Since the different frequencies used in the Marsh system are relatively close to each other, as opposed to "a center frequency of the second frequency band is at least twice higher than a center frequency of the first frequency band" recited in claim 18, Marsh teaches the use of a wide bandwidth antenna that operates between 800 MHz and 1 GHz (abstract, lines 16-18; Col. 2, lines 5-6; Col. 7, lines 18-23).

Note that, in Marsh, the different frequencies are chosen in a way to avoid weak or null interrogation signal zones caused by a combination of direct and reflected signals. One cannot simply arbitrarily pick different frequencies, since some frequencies would have overlapping weak or null interrogation signal zones caused by a combination of direct and reflected signals. Using these frequencies would render the Marsh system unsatisfactory.

Based on the stated purpose of Marsh to avoid weak or null interrogation signal zones caused by a combination of direct and reflected signals, one would not arbitrarily change the frequencies of the Marsh to use the antenna of Johnson, which is designed for entirely different applications for combining GPS (1575 MHz), cellular phone (824-890 MHz and 860-890 MHz), PCS device (1710-1880 MHz, 1750-1870 MHz, and 1850-1990 MHz), cordless telephone (902-928 MHz), or BLUETOOTH™ (2.4-2.5 GHz). None of the applications in Johnson is RFID.

Although Kodulkala discloses the use of 915 Mhz, 2.45 GHz or another selected frequency in different RFID systems, there is no suggestion of using these widely separated frequencies in one same RFID tag. Based on the stated purpose of Marsh to avoid weak or null interrogation signal zones caused by a combination of direct and reflected signals, one would not drastically change the frequencies of the Marsh to use the widely separated frequencies, just because these frequencies could be used in different RFID systems.

Thus, when the references (Marsh, Johnson, Kodulkala) are viewed together, one skilled in the art at the time of the claimed invention would not make the modification suggestion in the Office Action, for concerns related to defeating the purpose of the Marsh system (e.g., to avoid

weak or null interrogation signal zones caused by a combination of direct and reflected signals) and related to unnecessary complications in system design, and for lack of a proper motivation. None of the references discloses a radio frequency identification device having "at least one antenna to simultaneously tune to a plurality of frequency bands including a first frequency band and a second frequency band, wherein a center frequency of the second frequency band is at least twice higher than a center frequency of the first frequency band". Thus, applicant respectfully submits that claim 18 and its dependent claims are patentable over the cited references.

26. (Currently Amended) A radio frequency identification device comprising:

communication circuitry configured to receive forward signals from an interrogator and generate return signals according to an identification code stored to identify an object to which the radio frequency identification device is attached;

an antenna coupled with the communication circuitry and configured to communicate wireless signals at one of a plurality of frequencies including at least one of receiving the forward signals and outputting the return signals; and

wherein antenna is simultaneously substantially tuned to the frequencies, but not tuned to at least one frequency between two of the plurality of frequencies, at a moment in time. [Emphasis added]

As discussed above, the Marsh system is designed to use a wide bandwidth antenna that operates between 800 MHz and 1 GHz (abstract, lines 16-18; Col. 2, lines 5-6; Col. 7, lines 18-23) in order to use multiple frequencies to avoid weak or null interrogation signal zones caused by a combination of direct and reflected signals, one skilled in the art at the time of the claimed invention would not use the frequencies bands suggested in Johnson and thus to use the antenna of the Johnson system.

Since none of the references discloses "A radio frequency identification device comprising: … generate return signals according to an identification code stored to identify an object to which the radio frequency identification device is attached; … wherein the antenna includes the antenna is simultaneously substantially tuned to the frequencies at a moment in time

but not tuned to at least one frequency between two of the plurality of frequencies", Applicant respectfully submits that claim 26 and its dependent claims are patentable over the cited references.

Similarly, independent claim 50 recites "affixing a radio frequency identification device to an object to wirelessly identify the object via wireless signals at a plurality of frequencies using at least one antenna of the radio frequency identification device, the at least one antenna being simultaneously substantially tuned to the frequencies but not tuned to at least one frequency between two of the plurality of frequencies"; and independent claim 57 recites "forming at least one antenna to simultaneously communicate at a plurality of resonant frequencies, the at least one antenna not tuned to at least one frequency between two of the plurality of resonant frequencies; and coupling the at least one antenna with the communication circuitry". Thus, applicant respectfully submits that claims 50 and 57 and their dependent claims are patentable over the cited references.

Independent claim 62 recites:

62. (Currently Amended) A radio frequency identification device communication method comprising:
providing an interrogator;
communicating a forward signal at one of a plurality of frequencies using the interrogator, the forward signal having a forward range;
providing a radio frequency identification device configured to communicate with interrogator;
receiving the forward signal using one antenna of the radio frequency identification device;
processing the forward signal using communication circuitry of the radio frequency identification device after the receiving;
generating a return signal using the communication circuitry, after the processing, using another antenna of the radio frequency identification device, the return signal having a return range larger than the forward range. [Emphasis added]

The cited references do not show an RFID system having a return range larger than the forward range, which is recited in claim 62 and supported by the specification (e.g., [0065]). Thus, applicant respectfully submits that claim 62 is patentable over the cited references.

Thus, at least for the above reasons, the pending claims are patentable over the cited references.

CONCLUSION

It is respectfully submitted that all of the Examiner's objections have been successfully traversed and that the application is now in order for allowance. Accordingly, reconsideration of the application and allowance thereof is courteously solicited.

Respectfully submitted,

Date: April 18, 2008

/John Ward/
John Ward
Reg. No. 40,216

GREENBERG TRAURIG, LLP
CUSTOMER NUMBER **64494**
1900 University Avenue, Fifth Floor
East Palo Alto, CA 94303
Phone: (650) 328-8500
Fax: (650) 328-8508